CLAIMS

What is claimed is:

1. A coating admixture, comprising:

(a) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(b) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(c) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

2. A coating admixture according to Claim 1, further comprising soft filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said soft filler particulate having a mean particle size from about 5 to about 50 microns and selected from the group consisting of ground rubber and PTFE.

3. A coating admixture according to Claim 1, further comprising microspheres from about 0.5 to about 20 parts per 100 parts by weight of said silicone polymer blend.

4. A coating admixture according to Claim 3 wherein said microspheres are ceramic microspheres.

5. A coating admixture according to Claim 3 wherein said microspheres are glass microspheres.

6. A coating admixture according to Claim 1, further comprising fiberglass filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said fiberglass filler particulate having a mean particle size from about 10 to about 50 microns.

7. A coating admixture according to Claim 1, further comprising inorganic fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said inorganic fiber filler particulate having a mean particle size from about 10 to about 50 microns.

8. A coating admixture according to Claim 1, further comprising carbon fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said carbon fiber filler particulate having a mean particle size from about 10 to about 50 microns.

9. A machine component covered with a cured coating applied to a surface of said component, said cured coating having a cured continuous polymer phase derived from dispersed crosslinkable silicone polymer, said component comprising:

(a) a first coating region in said cured coating derived from a first admixture of said crosslinkable silicone polymer, said first coating region having a first coating thickness respective to said surface; and

(b) a second coating region in said cured coating derived from a second admixture of microspheres and said crosslinkable silicone polymer, said second coating region interbonded with said first coating region with said cured continuous polymer phase, said second coating region having second coating thickness respective to said surface which is greater than first coating thickness, said second coating admixture having dispersed microspheres;

wherein said cured continuous polymer phase interbonding said first region and said second region is derived from simultaneous curing of said crosslinkable silicone polymer in both said regions.

10. A machine component according to Claim 9 wherein said machine component is an exhaust gasket for an internal combustion engine.

11. A machine component according to Claim 9 wherein said cured coating is derived from a coating admixture, comprising:

(1) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(2) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(3) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

12. A machine component according to Claim 11 wherein said machine component is an exhaust gasket for an internal combustion engine.

13. A machine component according to Claim 9 having a recessed portion in said component surface, said recessed portion positioned at a location for compressively interfacing said component to a second component, wherein said second coating region fills said recessed portion and said second admixture has a sufficient quantity of said microspheres for providing, upon expansion of said microspheres and curing of said second region coating, an elevated compressible foam above said recessed portion, said elevated foam having an upper foam surface extending, respective to said component surface, above said first coating thickness to be generally concave to said component surface.

14. A machine component according to Claim 13 wherein said machine component is an exhaust gasket for an internal combustion engine.

15. A machine component according to Claim 9 wherein a plurality of said first coating regions are in said cured coating, said first regions positioned at a location for compressively interfacing said machine component to a second component through use of at least one mechanical fastener connected in each first coating region; and at least one said second coating region is in said coating, each second coating region positioned for compressively interfacing said machine component to said second component via coplanar mechanical compression derived from said fasteners, wherein said second admixture has a sufficient quantity of said microspheres for providing, upon expansion of said microspheres and curing of said second coating region, an elevated compressible foam with a thickness enabling a compressive seal between said second coating region and said second component.

16. A machine component according to Claim 15 wherein said machine component is an exhaust gasket for an internal combustion engine.

17. A method for making a coating admixture, comprising admixing:

(a) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(b) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(c) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

18. A method according to Claim 17, further comprising admixing soft filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said soft filler particulate having a mean particle size from about 5 to about 50 microns and selected from the group consisting of ground rubber and PTFE.

19. A method according to Claim 17, further comprising admixing microspheres from about 0.5 to about 20 parts per 100 parts by weight of said silicone polymer blend.

20. A method according to Claim 19 wherein said microspheres are ceramic microspheres.

21. A method according to Claim 19 wherein said microspheres are glass microspheres.

22. A method according to Claim 17, further comprising admixing fiberglass filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said fiberglass filler particulate having a mean particle size from about 10 to about 50 microns.

23. A method according to Claim 17, further comprising admixing inorganic fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said inorganic fiber filler particulate having a mean particle size from about 10 to about 50 microns.

24. A method according to Claim 17, further comprising admixing carbon fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said carbon fiber filler particulate having a mean particle size from about 10 to about 50 microns.

25. A gasket, comprising:

(a) an essentially rigid carrier; and

(b) a cured coating applied to at least one surface of said carrier, said coating cured from a coating admixture of:

(1) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(2) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(3) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

26. A gasket according to Claim 25 wherein said admixture further comprises soft filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said soft filler particulate having a mean particle size from about 5 to about 50 microns and selected from the group consisting of ground rubber and PTFE.

27. A gasket according to Claim 25 wherein said admixture further comprises microspheres from about 0.5 to about 20 parts per 100 parts by weight of said silicone polymer blend.

28. A gasket according to Claim 27 wherein said microspheres are ceramic microspheres.

29. A gasket according to Claim 27 wherein said microspheres are glass microspheres.

30. A gasket according to Claim 25 wherein said admixture further comprises fiberglass filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said fiberglass filler particulate having a mean particle size from about 10 to about 50 microns.

31. A gasket according to Claim 25 wherein said admixture further comprises inorganic fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said inorganic fiber filler particulate having a mean particle size from about 10 to about 50 microns.

32. A gasket according to Claim 25 wherein said admixture further comprises carbon fiber filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said carbon fiber filler particulate having a mean particle size from about 10 to about 50 microns.

33. A gasket, comprising:

(a) an essentially rigid carrier; and

(b) a cured coating applied to at least one surface of said carrier, said coating cured having a cured continuous polymer phase derived from dispersed crosslinkable silicone polymer, said cured coating having:

(1) a first coating region in said cured coating derived from a first admixture of said crosslinkable silicone polymer, said first coating region having a first coating thickness respective to said surface; and

(2) a second coating region in said cured coating derived from a second admixture of microspheres and said crosslinkable silicone polymer, said second coating region interbonded with said first coating region with said cured continuous polymer phase, said second coating region having second coating thickness respective to said surface which is greater than first coating thickness, said second coating admixture having dispersed microspheres;

wherein said cured continuous polymer phase interbonding said first region and said second region is derived from simultaneous curing of said crosslinkable silicone polymer in both said regions.

34. A gasket according to Claim 33 wherein cured coating is derived from a coating admixture, comprising:

(1) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(2) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(3) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

35. A gasket according to Claim 33 wherein said gasket is an exhaust gasket for an internal combustion engine.

36. A gasket according to Claim 34 wherein said gasket is an exhaust gasket for an internal combustion engine.

37. A gasket according to Claim 33 having a recessed portion in said surface, said recessed portion positioned at a location for compressively interfacing said gasket to a component, wherein said second coating region fills said recessed portion and said second admixture has a sufficient quantity of said microspheres for providing, upon expansion of said microspheres and curing of said second region coating, an elevated compressible foam above said recessed portion, said elevated foam having an upper foam surface extending, respective to said surface, above said first coating thickness to be generally concave to said surface.

38. A gasket according to Claim 37 wherein said gasket is an exhaust gasket for an internal combustion engine.

39. A gasket according to Claim 33 wherein a plurality of said first coating regions are in said cured coating, said first regions positioned at a location for compressively interfacing said gasket between two components through use of at least one mechanical fastener connected in each first coating region; and at least one said second coating region is in said coating, each second coating region positioned for compressively interfacing said gasket to said components via coplanar mechanical compression derived from said fasteners, wherein said second admixture has a sufficient quantity of said microspheres for providing, upon expansion of said microspheres and curing of said second coating region, an elevated compressible foam with a thickness enabling a compressive seal between said second coating region and one of said components.

40. A gasket according to Claim 39 wherein said gasket is an exhaust gasket for an internal combustion engine.

41. A method for making a gasket, comprising:

(a) admixing a coating admixture;

(b) coating an essentially rigid metal carrier with said admixture; and

(c) curing said coating;

wherein said coating admixture is admixed from:

(1) a silicone polymer blend of diphenyl polysiloxane silanol polymer and methylsiloxane polymer, wherein said diphyenyl polysiloxane silanol polymer is from about 45 to about 95 weight percent of said silicone polymer blend, and said methylsiloxane polymer is comparably from about 55 to about 5 weight percent of said silicone polymer blend;

(2) powdered particulate of aluminum, graphite, or a mixture thereof dispersed in said silicone polymer blend in a quantity from about 30 to about 115 parts per 100 parts by weight of said silicone polymer blend, wherein said powdered particulate has a maximum particle size of about 325 mesh; and

(3) zirconium acetate in a concentration from about 0.02 to about 1.5 parts per 100 parts by weight of said silicone polymer blend.

42. A method according to Claim 41, further comprising admixing soft filler particulate of less than about 35 parts per 100 parts by weight of said silicone polymer blend, said soft filler particulate having a mean particle size from about 5 to about 50 microns and selected from the group consisting of ground rubber and PTFE.

43. A method according to Claim 41, further comprising admixing microspheres from about 0.5 to about 20 parts per 100 parts by weight of said silicone polymer blend.

44. A method according to Claim 41 wherein said comprises heating said coating to a temperature of 1200° Fahrenheit.